

REMARKS

Applicants initially wish to thank the Examiner for the indication of allowable subject matter in dependent claims 7, 35, 37, and 38 and to acknowledge the Examiner's comments in the prior office actions which have enabled Applicants to set forth the invention more precisely in new claims 84-88 set out above.

To assist the Examiner in understanding Applicants' invention and new claims 84 to 88, submitted herewith are a sample of a laminate made in accordance with an embodiment of the present invention and cut from a large roll of laminate (see roll of laminate 60 and core 62 of Figure 6 of Applicants' specification) together with a comparison prior art laminate sample cut from a large roll of laminate made the "old" way and having visible unlaminated patches in the form of blisters.

The problem addressed by the present invention is identified by Applicants on page 3, lines 22 to 33 page 4, line 25 of the specification which states:

"On laminating the fabric [i.e., the non-woven spunbonded fabric] and film together, it was noticed that although the majority of the fabric and film has laminated well, there were patches where these materials were completely unlaminated. These unlaminated patches have the appearance of blisters in the laminate which have a minimum size of approximately 25mm² but are typically of the order of 500mm².

This irregularity was completely unexpected and, at first, was attributed by the inventors to incorrect processing conditions. Accordingly, the process conditions were altered in an attempt to attain an even level of lamination over the whole area of the fabric. Pressure, temperature, process speed and material tensions were all varied and the lamination process repeated in an attempt to attain even lamination. However, the variation of these parameters together and in combination did not obviate the problem and there was no obvious explanation for the effect".

Thus, the problem addressed by Applicants' invention is the avoidance of unlaminated patches having the appearance of blisters in a laminate comprising a non-woven spunbonded fabric having an emboss pattern formed thereon and a second material and provided with a visible interference pattern in an on-line lamination process using a point lamination pattern. The problem identified by Applicants is in essence a "non-woven bonding problem" to provide

improved quality laminates (see page 4, lines 4 and 5) which will be appreciated from the discussion on page 4, lines 14 to 25 of Applicants' specification, viz:

“The situation where the emboss pattern is in register with the lamination pattern is illustrated in Figure 3. In order to laminate an embossed material 10 to another material 12, there must be sufficient bonding pressure exerted at each lamination point 14 of the lamination pattern 16 by the lamination calender roll 18. When a given lamination point 14 is in register with an emboss point 20 of the embossed material 10 (as shown in Figure 3) there is insufficient solid thickness of the embossed material 10 and other material 12 to exert the required lamination point pressure. However, when the lamination point 14 is out of register with the emboss point 20 of the embossed material 10 as illustrated in Figure 4, there is sufficient solid thickness of the materials 10, 12 to provide the required lamination point pressure. This problem occurs even if the embossed material 10 is reversed such that a smooth surface 22 of the embossed material 10 is presented to the lamination calender roll 18.”

A prior art visible interference pattern provided in an on-line lamination process by a standard emboss pattern 24, Figure 5, (see page 5, lines and 19 to 26) and a standard lamination pattern (see page 5, lines 28 to 30) illustrates the occurrence of visible unlaminated patches in the form of blisters in the resultant laminate in Figure 5A which is described in lines 32 and 33 on page 5 through lines 1 to 13 on page 6 of Applicants' specification, viz:

“Referring to Figure 5A, when the fabric and film were laminated, unlaminated patches occurred only in areas (I) where the lamination points of the calender roll and the emboss points 26, already present in the spunbonded fabric, were in register with each other. In the areas (O) where the lamination points of the calender roll did not coincide with the emboss points 26 of the fabric (out of register), the materials were well laminated. It is to be noted that only for the purposes of illustration, the size of the emboss points 26 has been reduced in Figure 5A for the purposes of differentiation from the lamination points: this makes no material effect upon the results.

The unlaminated patches occurred in an approximately regular pattern over the surface of the laminate. This is because of the slight difference between the pitches of the standard emboss pattern 24 and the standard lamination pattern used. The resultant pattern on the laminate can be likened to an interference pattern (such as a Moiré interference pattern) between two signal point sources, with the blisters occurring at positions where the two signals are substantially in phase.”

Applicants' specification further states at lines 24 to 30 on page 6, viz:

“There are several reasons why this problem may not have been addressed previously. One such reason is that it may have been unnoticed because the blistering effect does not appear to occur to such a dramatic degree in relatively thin materials. The inventor’s further trials have shown that when lightweight fabrics, for example having a weight of 35g/m², are processed there are *no visible unlaminated areas* [italics added]. This is because these light-weight materials are thin and do not require as much energy [provided by heat as well as pressure] to bond the layers together.”

in lines 19 to 26 on page 7, viz:

“When using heavier and hence thicker materials, in particular when using embossed materials having a minimum weight of approximately 50g/m² the problem of blistering becomes readily apparent. In fact, the manifestation of the blistering effect appears to increase with increasing fabric thickness. If the problem had been noticed previously, alternative methods of lamination, for example continuous area lamination rather than discreet point lamination, may have been used to simply avoid the problem occurring. However, such alternative lamination processes each have other undesirable disadvantages in comparison with off-line point lamination.”

in lines 31 and 32 on page 12, viz:

“If the first material has a weight of 50g/m² or more, then the visual differences between the present invention and the prior art are more readily apparent.”

and in lines 9 and 10 on page 13 when comparing Applicants' invention to the prior art, viz:-

“Accordingly, the blistering effects which are visible when a 50g/m² material is laminated at the optimum speed would now not be visible.”

It should be noted that all the embodiments described in Applicants' specification with reference to the accompanying drawings incorporate non-woven spunbonded emboss pattern polymer fabrics 40 of which each has a weight that is not below the minimum of approximately 50g/m² at which blistering occurs , viz:

Figures 7, 7A and 7B (see page 23, lines 12 and 13) - 70g/m²;

Figures 8, 8A and 8B (see page 24, lines 25 and 26) - 70g/m²;

Figures 9A, 9B, 9C, 10, 11 and 12 (see page 25, lines 31 and 32) - 70g/m²; and

Figures 13A, 13B, 14, 15A, 15B, 16A and 16B (see page 28, line 12, page 29, lines 6, 15 and 23, and page 30, lines 17 and 18) - 70g/m².

It will be seen from the visible interference patterns illustrated Figures 7C, 8C, 9C, 16A and 16B as well as in Figure 6 of the embodiments and in the sample submitted herewith made in accordance with an embodiment of the invention, that there is **no** blistering and that none of these interference patterns bear any resemblance to the interference pattern illustrated in Figure 5A and the accompanying prior art sample in which blistering has occurred.

As stated in lines 7 to 12 on page 4 of Applicants' specification:

"The present invention resides in the *appreciation* [italics and underlining added] that the above described problem with an off-line point lamination process is *attributable to the interaction between the emboss pattern of the fabric with the lamination pattern of the calender roll* [italics and underlining added]. In particular, the present invention resides in the appreciation that *when the emboss points of an embossed material to be laminated are in register with the lamination points of a point lamination pattern, poor lamination occurs leading to the problem of blistering* [italics and underlining added]."

The problem of blistering experienced when laminating heavier and hence thicker embossed materials, in particular nonwoven spunbonded polymer fabrics having a plurality of emboss points that are formed under heat and pressure and that form an emboss pattern to a second material using a point-lamination pattern in an off-line lamination process that provides a resultant laminate with a visible interference pattern is overcome by the present invention as now recited in new claims 84 to 88.

Applicants note the rejection of claims 56-65 under 35 U.S.C. 112, second paragraph, as being indefinite. New claim 87 replaces claim 56. In response to the Examiner's objection to the term "unlaminated patches," the term has been qualified in new claims 84 and 87 by reciting "visible unlaminated patches in the form of blisters." The terms unlaminated patches and blistering/blisters, all of which are visible, are used synonymously and throughout the specification. See page 3, lines 23 to 25; page 4, line 12, page 6, lines 8 and 12, page 6, lines 25 and 26, page 6, lines 27 and 28, page 7, lines 19 to 26, page 23, lines 28 to 33 through page 24,

lines 1 and 2 describing the interference pattern of the first embodiment of Figure 7C; page 25, lines 12 and 13 when describing the interference pattern of the second embodiment of Figure 8C, page 26, lines 16 and 17 when describing the interference pattern of the third embodiment of Figure 9C; page 29, lines 2 to 5 when describing the interference patterns of Figures 16A and 16B of the fourth embodiment.

Applicants further note that the Examiner has maintained the rejection of claims 2-6, 8-19, 21-23, 30-34, 54-56, and 58-62 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Leak et al. For convenience and brevity, the Examiner's objections will be quoted from the office action of June 3, 2003 as these objections have been maintained by the Examiner in the RCE first office action.

"The examiner notes on page 7, line 4 et seq. that the recited claims ---- only require "one or more characteristics of the two patterns is selected and differentiated in order to control during lamination, the amount of point mis-registration between the emboss pattern on the spunbonded polymer fabric with the lamination pattern on the calender roll and thereby the occurrence of unlaminated patches in the resultant laminate" This limitation reads on the embodiments illustrated in figures 2-3 and examples disclosed in column 10, line 45 to column 11 line 53 and figures 7-9, (of Leak et al - added) which clearly show that the selected embossing and lamination patterns are different in terms of size, bonding density, bonding area, and bonding points configuration arrangements. As noted above, the embossing pattern is "varied"/different relative to the lamination pattern in terms of at least one of size, bonding density, bonding area and bonding points configuration arrangement, so that *"the amount of point registration between the emboss pattern ...lamination pattern is inherently controlled. It is respectfully submitted that, simply because Leak et al does not use the same terminology as the recited claims in describing the prior art embossing and lamination process, it does not mean that the recited process limitation is absent especially when the resultant articles of both processes are indistinguishable (italics and underlining added) and especially when Leak et al clearly teaches an embossing pattern being varied/different in terms of at least one of size, bonding density, bonding area and bonding points arrangement. (figures 2-3, figures 7-9 and examples).*

As for Counsel's argument on page 23 that "...there is not even an appreciation of the problem which the present invention is seeking to overcome.". Even for the sake of argument Counsel is correct, such is immaterial, since whatever problems being solved by Applicant's process would inherently flow from the process taught by Leak et al, because the recited process is indistinguishable from the process taught by Leak et al."(italics and underlining added)

Leak et al specifically relates to a laminate material suitable for use as the loop component of hook-and-loop fasteners for use on disposable absorbent products such as disposable diapers. While the use of non-woven materials reduces costs because they are generally cheaper and easier to produce than relatively expensive knit or woven loop components which have not found widespread acceptance on disposable absorbent products, particularly when employing greater amounts of loop components in order to assist use by the consumer, non-woven materials have not consistently presented loops which are large and open enough to easily engage available hook components. Accordingly, the goal of the Leak et al invention is to provide non-woven loop components of hook-and-loop fasteners which renders them suitable for use on disposable absorbent products (see column 1, lines 2 to 51), i.e. the provision of large and open enough loops that easily engage with available hook components, which, as mentioned in column 9, lines to 56 of Leak et al, “---- are those commercially available from Minnesota Mining and Manufacturing Company under the trade designation CS-200 and from VELCRO® Group Corporation under the trade designation CFM-29.”

Leak et al provide a laminate 10 having a first substantially non-elastic extensible film layer 12 and a second nonwoven fabric material layer 14 (Figure 1 column 2, lines 56 to 65), 18 (Figure 2, column 4, lines 53 to 55). The second nonwoven fabric material layer 14 (Figure 1) has a basis weight of **from about 5g/m² to about 60g/m²** (column 1, line 58 and column 4, line 1), alternatively **from about 15 g/m² to about 30 g/m²** (column 4, lines 2 and 3) and **24 g/m²** in the only specific example (column 10, lines 51 and 52), prebonded by a plurality of first spaced apart bond sites which form first bonded areas 20 (column 1, lines 59 to 61 and Figure 2, column 4, line 55) and first unbonded areas 22 (column 1, lines 59 to 61 and Figure 2 column 4, line 56). The first bonded and unbonded areas 20, 22 provide the non-woven material bonding pattern in the non-woven material shown in Figure 2.

As stated in column 4, lines 9 to 16, of Leak et al, the first bonded areas provide structural integrity to the non-woven web and serve to bond its fibres together thereby decreasing the tendency of the non-woven webs to pull apart as individual fibres during use of the laminate as the loop component of a hook-and-loop fastener (during disengagement).

The film layer 12 is stretched at least 25% (column 7, lines 62 and 63), many times (column 7, lines 61 to 63) or 100 percent (Table 1 of examples - column 11, line 4) beyond its first original length and while the first film layer 12 is in its stretched state, the second layer 14, 18 of non-woven material is bonded to the first film layer 12 (column 7, lines 15 to 20) to form a bulked laminate (10, Figure 1 and 24, Figure 3, column 5, lines 12 to 14). As discussed in column 5, lines 12 *et seq* the laminate (10, Figure 1 and 24 Figure 3) is a bulked laminate because the second (non-woven) layer (14, Figure 1 and 18, Figure 2) has from about 15 to 30 percent more surface area (see also column 2, lines 4 to 6 and lines 29 to 31) than the first film layer (12, Figure 1) per the same unit area due to the stretching of the first film layer (12, Figure 1) from its first or original length L_1 to a second length L_2 which is greater than the original length (L_1) and the ability of the first film layer (12, Figure 1) to recover a portion of its stretched length with the result that after the two layers have been attached to one another, the stretching forces are released and the first film layer retracts slightly to a third length L_3 (25 percent in Table 1 in column 1, lines 9 and 10) which is greater than the first or original length L_1 of the first film layer (12, Figure 1) yet slightly less than the second stretched length L_2 of the first film layer. Due to this slight recovery, the second layer tends to form pillows, thereby imparting a bulky **more three dimensional appearance** (emboldment added) to the composite (as can be seen in the laminate 10 of Figure 1 and relevant also to the laminate 24 of Figure 3). ---- if the first film layer 12 (Figure 1) and 18 (Figure 2) has 15 percent retraction, the second layer 14 (Figure 1) of non-woven material will have 15 percent more surface area than the first film layer per same unit area of the laminate.

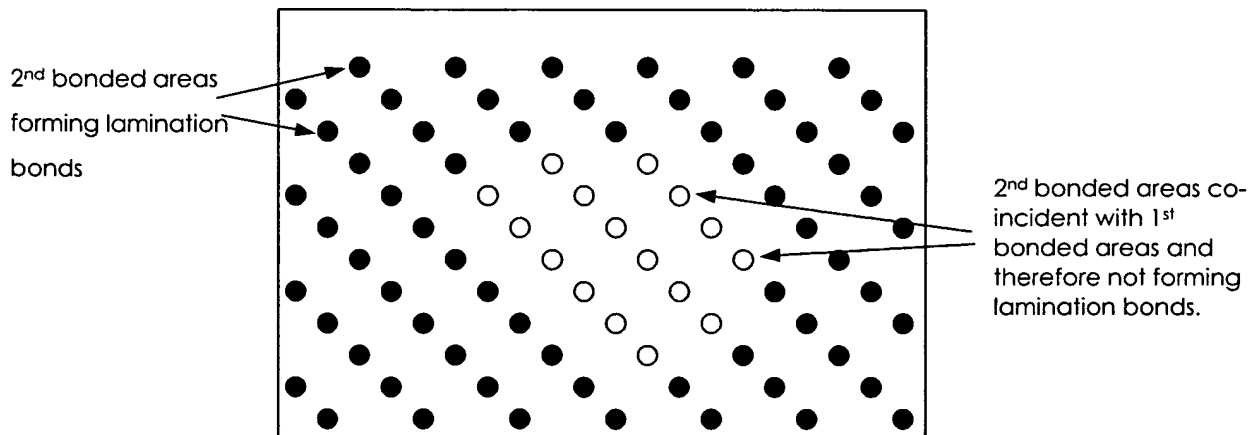
Referring to column 6 lines 56 to 61 of Leak et al, once the first (film) layer (12, Figure 1) has been bonded to the second (non-woven material) layer 14 and the composite (laminate 10, 24) has relaxed (stretching forces released), the newly formed laminate cannot be capable of stretching more than more than about 25 percent of the composite's relaxed length L_3 without affecting the lamination or bonding of the first layer to the second layer.

The plurality of uniform second bonded areas 16 (Figure 1), 26 (Figure 3) and second unbonded areas 28 (Figure 3) together define a surface area of the *bulk*ed (word in italics added) laminate 10, 24 (see column 5, lines 38 to 41 and column 1, lines 64 to 66) with the unbonded

areas 28 (Figure 3, column 6, lines 18 to 25) forming the loops illustrated in Figure 1 of the loop component laminate 10 of a hook-and-loop fastener. Figures 7 - 9 (column 2, lines 49 and 50) bonding patterns illustrated as resultant laminates used in connection with the examples are patterns A, B and C respectively in Table 2 lines 36 to 52 of column 11 which are the pin (lamination) patterns (second bonded areas 26 and unbonded areas 28 Figure 3) referred to in column 11, lines 30 to 35. In Table 2, percentage bond areas A (Figure 7) are 5.1; 7.7; 15.4; 8.5; 12.8; 4.3; 28.8 and 19.1; percentage bond area B (Figure 8) is 8.5 and percentage bond area C (Figure 9) is 8.5.

Applicants wish to emphasize that in Leak et al., "first bonded areas" refers to the bonding inherent in the raw material, i.e. the spunbonded nonwoven fabric (non-woven material 18 in Figure 2) as received. "Second bonded areas" refers to the pattern of bonding applied by the lamination process and, in Leak, is the same as the pattern of first bonded areas. In other words, every bond point on the lamination roll results in a bond point in the laminate.

This is not the case using nonwoven materials having a minimum weight of approximately 50 g/m^2 because not every point in the bond pattern of the lamination (calender) roll results in a bond point in the laminate. The specification teaches that if the first and second patterns are too similar (i.e., there is point to point registration), then relatively large areas are formed in which the emboss points are co-incident with the lamination points and, if the fabrics are a minimum of approximately 50 g/m^2 , lamination bonding is affected in these areas as a result and can give rise to totally un-laminated patches that can be seen in the form of blisters. If one were to illustrate such a bond pattern using Leak's diagrammatic convention, it would look like this:



Leak et al's diagrammatic convention (and the one above) is different from that used in the present invention in which both first and second bonded patterns are shown so that the areas of co-incidence can be seen.

The percentage bond areas A (Figure 7) of 5.1; 7.7; 15.4; 8.5; 12.8; 4.3; 28.8 and 19.1; percentage bond area B (Figure 8) of 8.5 and percentage bond area C (Figure 9) of 8.5 in Table 2 refer to the percentage bond areas of Figures 7, 8 and 9 which refer to the laminates of Leak et al's invention. This provides further evidence that, for Leak et al, every bond point on the single lamination pattern roll results in a bond point in the laminate. The percentage bond areas quoted in Table 2 are calculated by multiplying the pin size by the pin density (both quoted in Table 2). Thus the second bonded areas are a function of the lamination pattern only. In contrast, in embodiments of the present invention, the bonded areas of the laminate are a function of the lamination pattern (pin size x pin density) minus the "pin" areas co-incident with the first bonded areas.

For loop components of hook-and-loop fasteners, in column 6, lines 3 to 8, of Leak et al, it is desirable that the embossing roll used to form the second bonded areas have a pin depth which allows for the formation of relatively open second unbonded areas.

Leak et al. teach that the ability to minimize fiber stringout and delamination allows for the use of nonwoven materials in forming laminates used as the loop component of a hook-and-loop fastener (see column 6, lines 50 to 55). As stated in column 7, lines 30 to 35 of Leak et al with reference to Figure 4, "By selecting the bond pattern on the pattern roll, the location of thermal bonding can be spaced at regular or irregular distances from one another along the material in the machine direction so that there are a plurality of spaced apart bond sites along the length of the material as shown in Figs. 1 and 3." These spaced apart bond sites are indicated by the reference character 16 in Figure 1 and by the reference character 26 in Figure 3. This is the resultant laminate 10 in Figure 1 and 24 in Figure 3.

In other words, according to Leak et al, "the location of thermal bonding" is dependent entirely and only upon the selection of the bond pattern on the single lamination pattern roll. Again, this contrasts sharply with the present invention which teaches that the location of thermal bonding

is dependent upon both the selection of the bond pattern on the pattern roll and upon the pattern of first bonded areas in the raw material.

While column 8, lines 55 and 56, of Leak et al state that their laminates are suited for use as the loop components of hook-and-loop fasteners, the only laminates described and illustrated in Leak are loop components used for disposable absorbent products. Clothing is mentioned merely in passing in column 8, line 59 and the only specific disposable absorbent product described is the disposable diaper 40 illustrated in Figure 6 (see column 8, lines 60 to 62). In Figure 6, the laminate 44 (24 Figure 3) has a second nonwoven material layer 48 (14 in Figure 1) that forms the outer surface of the diaper 40 and fastening tabs 52 having hook components 56 that can engage the second layer 48 at any location on the outer surface of the diaper which offers convenience to the consumer and the flexibility to ensure proper fit about the body of the wearer (see column 9, lines 6 to 15). This avoids the problem of a separate patch of loop component at the only location to which the hook components were intended to engage to fasten the diaper about the waist of a user which added expense and limited the locations of the loop component to which the hook component could be releasably engaged (column 9, lines 16 to 26).

For hook-and-loop fasteners, a satisfactory shear strength performance is obviously very important. Thus, the shear strength of such fasteners with the loop component of the Leak et al invention comprising the laminate made as described in column 10, lines 45 to 67 through column 11, lines 1 to 35 following the Test Procedure for loop and hook material set out in column 10, lines 1 to 41 and in column 11 lines 54 to 59, and the results of the shear tests for the samples of Table 2 using the bond pattern A of the laminate of Figure 7, B of the laminate of Figure 8 and C of the laminate of Figure 9 are set out in Table 3, are shown graphically in Figure 10 and are commented on in column 12, lines 13 to 21.

It is submitted that the above discussion of Leak et al and Applicants' invention now more fully defined in new claims 84-88 which highlight the differences between Applicants' invention and the invention of Leak et al.

Leak et al requires the production of a non-woven laminate 10 (Figure 1), and 24 (Figure 3) suitable for use as the loop component of hook-and-loop fasteners which is bulked by stretching of a

film first layer to form loops in a second nonwoven (spun bonded) layer which are large and open enough to easily engage available hook components which renders them suitable for use on disposable absorbent products and of which the engaged hook-and-loop components have to exhibit satisfactory shear strength.

Applicants' new independent claims 84 and 87 require the production of a laminate made from a first material in the form of a nonwoven spunbonded fabric with a minimum weight of approximately 50 g/m^2 and having an emboss pattern formed thereon to a non-embossed second polymer material by controlling the amount of point mis-registration between the patterns during lamination to avoid the occurrence of visible unlaminated patches in the form of blisters (see Figure 5A and sample, and laminate 60 of Figure 6 and sample). Such features are not taught or suggested by Leak et al.

The passages quoted from above from Applicants' specification describe overcoming the problem of "blistering," i.e. avoiding the appearance of visible unlaminated patches in the form of blisters in the resultant laminate, as stated in the specification at page 7, lines 19 to 26. While Leak et al disclose a basis weight for the second nonwoven fabric material layer 14 (Figure 1) of from about 5 g/m^2 to about 60 g/m^2 (column 1, line 58 and column 4, line 1), which overlaps the recited approximately 50 g/m^2 fabric weight at the top region (i.e. 50 g/m^2 to 60 g/m^2) of the range, there is no teaching or suggestion by Leak et al that embossed materials one layer of which has a **minimum weight of approximately 50 g/m^2** would suffer the problem of blistering. This is not surprising given that the unbonded areas 28 (Figure 3 of Leak et al) form loops and that the alternative range of basis weight for the second non-woven layer 14 is **from about 15 g/m^2 to about 30 g/m^2** (column 4, lines 2 and 3) and specific value of **24 g/m^2** in the Examples section (column 10, lines 51 and 52) which are all "light weight" (relatively thin) non-woven embossed material second layers in which blistering would not appear (see lines 24 to 30 on page 6 of Applicants' specification), i.e., there would be no visible unlaminated patches in form of blisters. Thus, Leak cannot anticipate the subject matter claimed in new claims 84 and 87 because one would have to select a fabric weight from the broadly recited range. The act of selection negates anticipation.

If one were to select minimum values (though there is no teaching or suggestion in Leak et al as to the reason why one would do that) all one would select would be the values of **5g/m²** and **15 g/m²** at the bottom of the two ranges specified and conceivably the specific value of **24 g/m²**. This is all consistent with Leak et al being concerned with disposable products such as diapers and clothing (see above) which use lightweight relatively thin materials to obtain the “drape” characteristics essential with products that are designed for wear. On the other hand as will be apparent from what has been said above, Applicants' specific examples are all consistent with the selected **approximately 50g/m²** minimum weight of embossed non-woven material, namely **70g/m²**.

Nor would it have been obvious for one skilled in the art to select a heavier material for use in Leak et al's process because, as noted above, Leak is concerned with providing a lightweight laminated material for disposable uses such as diapers. There is no motivation to make such a selection, for to do so would destroy the lightweight laminate needed by Leak et al for its intended purpose. Thus, it submitted that the feature of the nonwoven spunbonded polymer fabric having a minimum weight of approximately 50g/m² as recited in independent claims 84 and 87, patentably distinguishes these claims from Leak et al. In view of the presentation of new independent claims 84 and 87, the dependencies of certain claims have been amended and claims 15, 16, 54-56 and 62 have been cancelled.

New claims 85 and 88 further recite that the lamination produces a visible interference pattern. The laminate 10, 24 of Leak et al has second bonded areas 16 (Figure 1), 26 (Figure 3) and second unbonded areas 28 (Figure 3) and those laminates shown in Figures 7 to 9 and used in Table 2 which together define a surface area of the bulked laminate 10, 24 and the second unbonded areas which are relatively open and form the loops. It will be appreciated from Figures 3 and 7 to 9 that it is the single lamination bond pattern made up of the second bonded areas and the loops formed by the unbonded areas that are visible on the surface area of the resultant bulked laminate 24 as the loops shown in Figure 1 would prevent the formation and appearance of any visible interference pattern even it were contemplated by Leak et al, which clearly it is not. The resultant laminate 24 shown in Figure 3 and the resultant laminates shown in Figures 7 to 9 clearly illustrate that the first

bonded areas 20 of the non-woven material 18 of Figure 2 are not visible in the resultant laminate 24 (Figure 3) and resultant laminates of Figures 7 to 9 and that therefore there is no visible interference pattern which is formed by making use of or controlling interaction between the emboss pattern on the nonwoven spunbonded polymer fabric and the lamination pattern on the single lamination pattern calender roll and which defines a surface area of the resultant laminate.

Thus, the Leak et al laminate 10, 24, does not, and cannot, have a visible interference pattern as now claimed in new claims 85 and 88, examples of which visible interference patterns are shown as 70 (Figure 7C), 72 (Figure 8C), 82 (Figure 9C), 88 (Figure 16A) and 90 (Figure 16B).

Unlike Leak et al in which the formation of relatively open second unbonded areas is essential to form large and open enough loops that easily engage with available hook components (see column 1, lines 44 to 47) in the surface area of the resultant laminate 10, 24, Applicants control the amount of point mis-registration between the emboss pattern on the nonwoven spunbonded polymer fabric and the lamination pattern on the single lamination pattern calender roll. Claim 87 recites selecting and differentiating one or more characteristics of the two patterns to avoid the occurrence of visible unlaminated patches in the form of blisters in the resultant laminate.

In Leak et al, the first film layer is stretched up to at least 25% of its original length, bonded while still stretched to form the second bonded areas 16 (Figure 1) and 26 (Figure 3) and unbonded areas 28 (Figure 3) forming loops and defining a surface area of the resultant laminate, and allowing the stretched bonded laminate to retract to a length intermediate the original length and the stretched length which causes the second layer to tend to form pillows imparting a bulky more three dimensional appearance to the resultant laminate: this cannot be a feature of Applicants' resultant laminate with its visible interference pattern made up of the interaction or interference between two patterns, namely the emboss pattern on the nonwoven spunbonded polymer fabric and the lamination pattern on the single lamination pattern calender roll, is seen in the resultant laminate 60 of Figures 6, 7C, 8C, 9C, 10, 11, 16A and 16B and in the sample of Applicants' resultant laminate filed herewith.

It cannot be inherent in Leak et al to control the interaction between the emboss pattern on the non-woven spunbonded material second layer 14 and the lamination pattern on the single

lamination pattern calender roll to control the amount of point mis-registration between the two patterns because there is no visible interference pattern (indeed there is no interference pattern in Leak et al). What is possible to ascertain from Leak et al is that those percentage bonded areas (Table 2) that ideally produce relatively open loops for the loop component of a hook-and-loop fastener have satisfactory shear strength (column 12, lines 13 to 21) when tested with, for example, the Velcro® type hook component specified in column 11, lines 54 to 59) are important when providing a non-woven laminate suitable for use as the hook component of a hook-and-loop fastener.

The visible interference pattern recited in new claims 85 and 88 makes it clear that there are no loops as will be appreciated from the sample made in accordance with the present invention which could not, and does not, engage with the hooks of the sample of a Velcro® type hook component submitted herewith.

Thus both the process and articles made in accordance with Applicants' claimed process are clearly different and distinguished from those of Leak et al. The stretching of the first film layer 1, bonding of the second prebonded non-woven layer 14 to the first film layer 1 while stretched to produce a bonded laminate and retraction of the bonded laminate to produce a resultant bulked laminate 10 having loops (Figure 1), 24 (Figure 3) and those bulked laminates having the lamination bonding patterns illustrated in Figures 7 to 9 are **essential** teachings in Leak et al to provide an improved nonwoven loop component suitable for use in a hook-and-loop fastener.

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For all of the above reasons, Applicants submit that claims 2-14, 17-19, 21-23, 30-35, 37-38, 54, 56-61, 63-65, as amended, and new claims 84-88 are patentable over the cited art of record. Early notification of allowance is respectfully solicited.

Respectfully submitted,
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